

Claims

- [c1] 1. A method of acquiring x-ray data, comprising:
acquiring a series of x-ray data for generating at least one x-ray image, said data being acquired using an x-ray detector to receive x-ray beams from an x-ray source, said x-ray source and said x-ray detector being opposingly located relative to one another and being rotatingly disposed relative to an object being imaged, wherein said object is displaced along an axis, said axis extending perpendicularly through a plane defined by said x-ray beams, further wherein said displacement occurs at, at least one of a constant, accelerating, and decelerating rates;
varying said rate of displacement, said variation enabling said x-ray detector to acquire data for at least one x-ray image during said accelerating or said decelerating displacement; and employing current modulation during said acquisition.
- [c2] 2. A method as in claim 1 wherein said object is displaced as follows:
in a first direction along said axis or
in a second direction along said axis.
- [c3] 3. A method as in claim 2 wherein said first direction and said second direction are opposite directions relative to one another.
- [c4] 4. A method as in claim 2 wherein data acquired during displacement in said first direction comprises data for at least one image of a first spatial area of said object and data acquired during displacement in said second direction comprises data for at least one image of a second spatial area of said object.
- [c5] 5. A method as in claim 4 wherein said x-ray detector acquires image data for each said first spatial area during a first displacement in one of said directions and said x-ray detector acquires image data for each said second spatial area during a second displacement in the other of said directions.
- [c6] 6. A method as in claim 1, wherein said current modulation further comprises at least one of the following:
adjusting an x-ray tube current of said x-ray source, said adjustment being proportionate to said rate of displacement to cause an x-ray flux to remain substantially constant, and
adjusting an x-ray tube current of said x-ray source, said adjustment causing a uniform

standard deviation across said generated images.

- [c7] 7. A system for acquiring x-ray data, comprising:
an x-ray detector for receiving x-ray beams from an x-ray source, said x-ray source and said x-ray detector being opposingly located relative to one another and being rotatably disposed relative to an object on a support being imaged, said object being displaced along an axis, said axis extending perpendicularly through a plane defined by said x-ray beams, wherein a series of x-ray data for generating at least one x-ray image is acquired by said x-ray detector during said displacement, said displacement occurring at, at least one of a constant, accelerating, and decelerating rates;
said support having a varying said rate of displacement, said variation enabling said x-ray detector to acquire data for at least one x-ray image during said accelerating or said decelerating displacement; and
a modulator employing current modulation during said acquisition.
- [c8] 8. A system as in claim 7 wherein said object is displaced as follows:
in a first direction along said axis or
in a second direction along said axis.
- [c9] 9. A system as in claim 8 wherein said first direction and said second direction are opposite directions relative to one another.
- [c10] 10. A system as in claim 8 wherein data acquired during displacement in said first direction comprises data for at least one image of a first spatial area of said object and data acquired during displacement in said second direction comprises data for at least one image of a second spatial area of said object.
- [c11] 11. A system as in claim 10 wherein said x-ray detector acquires image data for each said first spatial area during a first displacement in one of said directions and said x-ray detector acquires image data for each said second spatial area during a second displacement in the other of said directions.
- [c12] 12. A system as in claim 7, wherein said current modulation further comprises at least one of the following:
adjusting an x-ray tube current of said x-ray source, said adjustment being proportionate to said rate of displacement to cause an x-ray flux to remain substantially constant, and

adjusting an x-ray tube current of said x-ray source, said adjustment causing a uniform standard deviation across said generated images.

- [c13] 13. An article of manufacture comprising a computer usable storage medium, said computer usable storage medium including computer readable program code, said computer readable program code for acquiring x-ray data, said computer readable program code further comprising computer readable program code for performing the following:
acquiring a series of x-ray data for generating at least one x-ray image, said data being acquired using an x-ray detector to receive x-ray beams from an x-ray source, said x-ray source and said x-ray detector being opposingly located relative to one another and being rotatingly disposed relative to an object being imaged, wherein said object is displaced along an axis, said axis extending perpendicularly through a plane defined by said x-ray beams, further wherein said displacement occurs at, at least one of a constant, accelerating, and decelerating rates;
varying said rate of displacement, said variation enabling said x-ray detector to acquire data for at least one x-ray image during said accelerating or said decelerating displacement; and
employing current modulation during said acquisition.
- [c14] 14. An article of manufacture as in claim 13 wherein said object is displaced as follows:
in a first direction along said axis or
in a second direction along said axis.
- [c15] 15. An article of manufacture as in claim 14 wherein said first direction and said second direction are opposite directions relative to one another.
- [c16] 16. An article of manufacture as in claim 14 wherein data acquired during displacement in said first direction comprises data for at least one image of a first spatial area of said object and data acquired during displacement in said second direction comprises data for at least one image of a second spatial area of said object.
- [c17] 17. An article of manufacture as in claim 16 wherein said x-ray detector acquires image data for each said first spatial area during a first displacement in one of said directions and said x-ray detector acquires image data for each said second spatial area during a second displacement in the other of said directions.
- [c18] 18. An article of manufacture as in claim 13, wherein said current modulation further

comprises at least one of the following:

adjusting an x-ray tube current of said x-ray source, said adjustment being proportionate to said rate of displacement to cause an x-ray flux to remain substantially constant, and
adjusting an x-ray tube current of said x-ray source, said adjustment causing a uniform standard deviation across said generated images.

- [c19] 19. A computer data signal, said data signal comprising code configured to cause a controller to implement a method for acquiring x-ray data, the method comprising:
acquiring a series of x-ray data for generating at least one x-ray image, said data being acquired using an x-ray detector to receive x-ray beams from an x-ray source, said x-ray source and said x-ray detector being opposingly located relative to one another and being rotatingly disposed relative to an object being imaged, wherein said object is displaced along an axis, said axis extending perpendicularly through a plane defined by said x-ray beams, further wherein said displacement occurs at, at least one of a constant, accelerating, and decelerating rates;
varying said rate of displacement, said variation enabling said x-ray detector to acquire data for at least one x-ray image during said accelerating or said decelerating displacement; and
employing current modulation during said acquisition.
- [c20] 20. The computer data signal of claim 19 wherein said object is displaced as follows:
in a first direction along said axis or
in a second direction along said axis.
- [c21] 21. The computer data signal of claim 20 wherein said first direction and said second direction are opposite directions relative to one another.
- [c22] 22. The computer data signal of in claim 20 wherein data acquired during displacement in said first direction comprises data for at least one image of a first spatial area of said object and data acquired during displacement in said second direction comprises data for at least one image of a second spatial area of said object.
- [c23] 23. The computer data signal of in claim 22 wherein said x-ray detector acquires image data for each said first spatial area during a first displacement in one of said directions and said x-ray detector acquires image data for each said second spatial area during a second displacement in the other of said directions.

[c24] 24. The computer data signal of claim 19, wherein said current modulation further comprises at least one of the following:
adjusting an x-ray tube current of said x-ray source, said adjustment being proportionate to said rate of displacement to cause an x-ray flux to remain substantially constant, and
adjusting an x-ray tube current of said x-ray source, said adjustment causing a uniform standard deviation across said generated images.

[c25] 25. A system for acquiring x-ray data, comprising:
means for acquiring a series of x-ray data for generating at least one x-ray image, said data being acquired using an x-ray detector to receive x-ray beams from an x-ray source, said x-ray source and said x-ray detector being opposingly located relative to one another and being rotatably disposed relative to an object being imaged, wherein said object is displaced along an axis, said axis extending perpendicularly through a plane defined by said x-ray beams, further wherein said displacement occurs at, at least one of a constant, accelerating, and decelerating rates;
means for varying said rate of displacement, said variation enabling said x-ray detector to acquire data for at least one x-ray image during said accelerating or said decelerating displacement; and
means for employing current modulation during said acquisition.